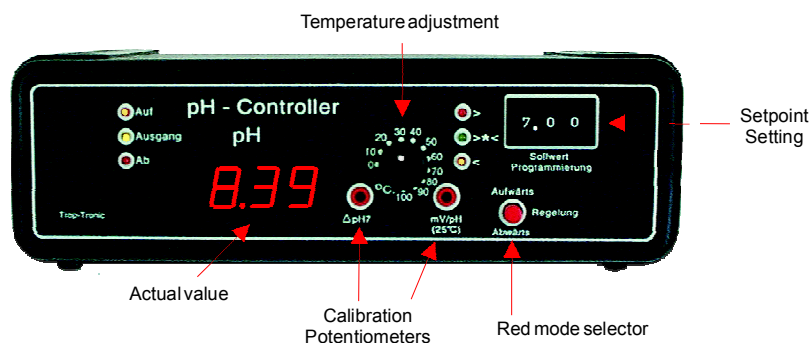


Operating instructions for pH - Controller

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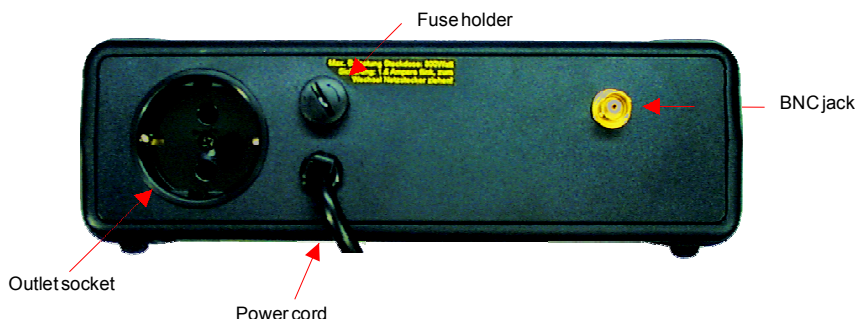
Elements of the front side



4 digit LED - display
Temperature adjustment knob
Calibration potentiometers
3 digit push-button switch
Mode selector
3 LEDs at the left
3 LEDs at the right

shows the actual pH - value
has to be set to the temperature of the aquarium
are used for calibration
sets the pH - setpoint
set the control mode up/down
indicate the control mode up/down (red LEDs) and the state of the outlet (yellow LED)
indicate actual value is above or equal or below the setpoint

Elements of the rear side



Connect the power cord with the 235 volts power net. Connect the pH - sensors connector to the BNC - jack at rear side. Put the pH - electrode into the aquarium. Don't submerge the electrode fully. The top of the electrode should be off the water. Avoid stray current by bad isolated heaters or pumps in the aquarium. Even small voltages which do not affect the creatures in the aquarium can damage the electrode rapidly. There is no warranty for electrodes ruined by this galvanic process.

If you want to control the pH - value for a certain value a proper device like a pump or a valve has to be connected to the outlet socket. (There are two examples showing how to control in this text)

The electrodes protection cap is filled with a special solution (KCL) to protect the electrode from becoming dry and aging. If the electrode is not used for some time apply the cap again carefully removing any air bubbles.

For glass electrodes use the plastic protection tube by sliding the tube gently onto the electrode. The small holes in the protection tube should be near the electrodes tip. By doing so your precious electrode will be protected from breaking. Before calibrating remove the protection tube.

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Calibration:

With the measuring device comes a set of calibration solutions. This solutions should have the same temperature as adjusted at the pH - meters front. If necessary turn the rotary knob to adjust. Before calibration flush the electrode under clear water. Fill the glass flasks half with pH7 and pH4 solution. Now dry the electrode cautiously with a clean cloth to prevent dilution of the calibration fluid. As there are only some millilitres in each flask every drop of water at the tip of the electrode will change the reading considerably. Now put the electrodes tip into the green pH7 - solution and wait for the display to stabilise. This may take some minutes. Time increases as the electrode age. When the display has settled adjust to 7.00 using the screwdriver with the left red adjustment potentiometer. Flush and dry the electrode again and put it into the red pH4 - solution. When the display has settled adjust to 4.00 using the screwdriver with the right red adjustment potentiometer. Trop Electronic devices are shipped already calibrated and ready to use. New devices should be recalibrated approximately two weeks after setting up operation.

Examples:

Please observe for both examples

be cautious to start with low amount of gas or solution. Don't place the pH - electrode to near to gas/solution outlet. Set the 3 digit push-button switch to the desired pH-value. The outlets state is indicated by the left yellow LED. It will take approx. 1 minute for the outlet (and the yellow LED) to be activated when the actual value is out of range. The outlet will shut off immediately if the actual value runs into the "good" range. When the actual value crosses the setpoint (depending on the mode switch) the delay will start again. This delay is built in to enable mixing of water and gas/solution and to avoid unnecessary switching of the valve due to choppy water, avoiding unnecessary noise etc. After 10 minutes on for the outlet there will be a pause for 1 minute enabling the fluids to mix. The green LED (">*<") will be on when the pH - value is equal to the setpoint.

Example 1: lowering the pH - value

The devices outlet has to be connected to a valve which controls the intake of carbon dioxide (Co2) into an aquarium. The red mode control selector has to be pressed (in). Now the device will try to hold the pH-value to the selected setpoint. If the pH-value is higher than the setpoint the upper right red LED (">") should be on. After approx. 1 minute the outlet will switch on.

Example 2: increasing the pH - value

The devices outlet has to be connected to a dosing pump which controls the intake of liquid carbonate-bicarbonate into an aquarium. The red mode control selector has to be released (out). Now the device will try to hold the pH-value to the selected setpoint. If the pH-value is lower than the setpoint the lower right red LED ("<") should be on. After approx. 1

Replacing the fuse

The fuse is in a holder above the power cord at the rear side of the device. The holder cap is released by turning it counterclockwise. **Be sure to disconnect the device from the powernet before opening the holder.** The fuse has to be replaced by the exactly the same rating.

Subject to change without prior notice.